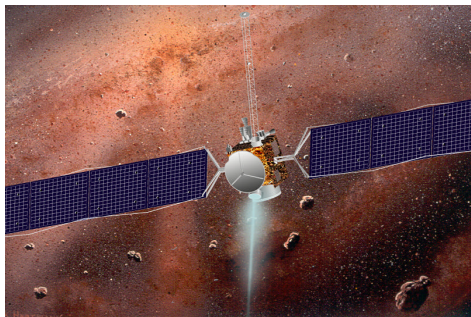


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Dawn of a new mission begins '02

The Dawn spacecraft with images of asteroids Vesta and Ceres are shown against the background of a painting by William K. Hartmann titled "A cocoon nebula, perhaps the primordial solar nebula."



JPLERS ENDED 2001 saying goodbye to Deep Space 1 and looking forward to a new Dawn—a mission that will orbit the two largest asteroids in the solar system. The Dawn mission builds on the ion-propulsion technology pioneered by Deep Space 1, the little ion engine that could, which continued to astound us throughout 2001.

Dawn was approved shortly before the end of the year, and is one of a pair of missions chosen by NASA for the agency's Discovery Program. JPL's Sarah Gavit is the project manager, and Dr. Christopher T. Russell of UCLA is the principal investigator. The mission will launch in 2006.

NASA selected Dawn and Kepler—a spaceborne telescope, also scheduled for launch in 2006—from 26 proposals made in early 2001. The Discovery Program emphasizes lower-cost, highly focused scientific missions that must stay within a development cost cap of about \$299 million.

"Kepler and Dawn are exactly the kind of missions NASA should be launching, missions that tackle some of the most important questions in science yet do it for a very modest cost," said Dr. Edward Weiler, associate administrator for space science at NASA Headquarters. "It's an indicator of how far we've come in our capability to explore space when missions with such ambitious goals are proposed for the Discovery Program of lower-cost missions rather than as major projects costing 10 times as much."

The Dawn mission will make a nine-year journey to orbit the two most massive asteroids known, Vesta and Ceres, two "baby planets" very different from each other yet both containing tantalizing clues

about the formation of the solar system. Using the same set of instruments to observe these two bodies, both located in the main asteroid belt between Mars and Jupiter, Dawn will improve our understanding of how planets formed during the earliest epoch of the solar system.

Ceres has quite a primitive surface, water-bearing minerals, and possibly a very weak atmosphere and frost. Vesta is a dry body that has been resurfaced by basaltic lava flows, and may have an early magma ocean like Earth's moon. Like the moon, it has been hit many times by smaller space rocks, and these impacts have sent out meteorites at least five times in the last 50 million years.

The mission will determine these pre-planets' physical attributes, such as shape, size, mass, craters and internal structure, and study more complex properties such as composition, density and magnetism.

The mission will determine these pre-planets' physical attributes, such as shape, size, mass, craters and internal structure, and study more complex properties such as composition, density and magnetism.

During its nine-year journey through the asteroid belt, Dawn will rendezvous with Vesta and Ceres, orbiting from as high as 800 kilometers (500 miles) to as low as 100 kilometers (about 62 miles) above the surface.

"I'm ecstatic that we'll have such a great opportunity to show what ion propulsion can do," Gavit said. "Ceres and Vesta are two of the largest unexplored worlds in our solar system. We'll learn about early planet formation in ways that wouldn't have been possible before this mission." She said she looks forward to working with Orbital Sciences, a new industry partner for NASA's interplanetary spacecraft. Orbital Sciences Corporation, Dulles, Va., will develop the Dawn spacecraft.



"We'll learn about early planet formation in ways that wouldn't have been possible before this mission."

— Sarah Gavit, Dawn project manager

The Dawn mission builds on the highly successful ion-propulsion technology pioneered by Deep Space 1. Launched on Oct. 24, 1998, Deep Space 1 was designed and built in just three years, the shortest development time for any interplanetary spacecraft NASA has flown in the modern age. It was the first mission in NASA's New Millennium program. In addition to its technical achievements, Deep Space 1 is an ambassador of Earthlings' goodwill, carrying with it a compact disc of children's drawings and engineers' thoughts.

JPLers have big hearts

"Chanson," below, entertained at a United Way campaigners' thank-you luncheon.



JPLers donated \$450,570 for the United Way of America during the Lab's recent "Neighbor to Neighbor, Heart to Heart" campaign.

The campaign results were announced at a Dec. 18 luncheon in von Karman Auditorium. The luncheon was organized to thank the volunteers for the time and effort they contributed to the JPL United Way campaign.

The Food Drive campaign was especially successful in 2001. A record 81 boxes of canned food was collected, a 43 percent increase over last year's quantities.

The food will be distributed to hundreds of needy families by five local agencies.

"We demonstrated, as we do every year, that JPLers are good and caring neighbors," said Blaine Baggett, executive manager of JPL's Office of Communication and Education, who served as this year campaign manager. "Our food drive will help hundreds of needy families during the holiday season, and we hope the nearly half million dollars raised will have a positive impact on our area throughout the year."

The \$450,570 raised is equivalent to a donation of almost \$100 per JPL employee.

Fifty-six employees made contributions of \$1,000 or more. These "Leadership Givers" contributed a total of \$84,692. This is a 21 percent increase in participation over last year, and a 23 percent increase in contributions for this category of donations.

Here's how the rest of the numbers shake



Peter Poon (left) presents Blaine Baggett a certificate of appreciation for leading the United Way campaign.

out: Organization 9X had the highest percentage participation, at 79 percent, while 3X had the highest number of participants, at 1,431. Organization 6X had the highest per-capita dollar amount at \$171, while 3X had the highest dollar amount donated, at \$288,340.

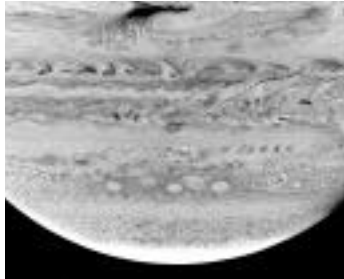
JPL's Space Odyssey

A Year in Review

2001 truly was a year of great space adventures for the Lab. Throughout the year JPLers enjoyed one success after another — ranging from spectacular launches to unprecedented discoveries about comets, asteroids and planets — including our own.

JANUARY

On New Year's Day, on the way to its Saturn destination, the Cassini spacecraft's radio and plasma wave science instrument detected low-frequency radio waves at a distance of 10 million kilometers (6.2 million miles) from Jupiter (*below*), which University of Iowa scientists converted to sound waves to make the patterns audible. ... The 2001 Mars Odyssey spacecraft (*above*) arrived at Kennedy Space Center to prepare for its April launch. ... JPL-led proposals to look deep inside Jupiter's atmosphere and magnetosphere, and to orbit two of the largest asteroids in the solar system, were selected by NASA for study as candidates for the next mission in the agency's Discovery Program of lower cost, highly focused, rapid-development scientific spacecraft. JPL was also named to participate in a proposed French-led Net-Lander Mission, scheduled for launch in 2007. ... Dr. Charles Elachi was named to succeed Dr. Edward Stone as JPL director. ... The Mars Global Surveyor spacecraft, which had been in orbit since 1997, ended its primary mission Jan. 31 and immediately began an extended mission through April 2002.



FEBRUARY



A JPL navigation team guided the NEAR Shoemaker spacecraft to a controlled landing on asteroid Eros (*above*), the first time such a maneuver had been attempted. ... A JPL-developed high-performance mass spectrometer (*below*) was delivered to the International Space Station to detect leaks outside the orbiting facility. The device can be placed on an astronaut's chest pack, where it can easily point toward the areas under inspection. ... JPL scientists were part of a team that worked on the Canadian Space Agency's Radarsat-1 satellite to track movement in the Antarctic ice sheet.



MARCH

JPL developed a mathematical model of the surface of Venus that filters out recurring radar noise, showing a cracking pattern that indicates that the surface has heated and cooled by almost 200 degrees C (390 F).



APRIL

The 2001 Mars Odyssey spacecraft launched from Kennedy Space Center April 7 (*mission operations team below*). ... The Lab held a retirement ceremony for Dr. Edward Stone, and announced the establishment of the new Dr. Edward C. Stone Award for Outstanding Research Publication. ... JPL acquired one of the world's finest electron beam lithography systems, which will allow researchers in the Microdevices Laboratory to work on the sub-molecular scale.



MAY

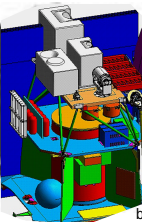
Dr. Charles Elachi took the helm as the eighth director in JPL's history. Elachi announced a reorganization and restructuring of the Laboratory that included new positions on the Executive Council. ... The city of Monrovia successfully tested an emergency vehicle early warning system that was designed by a private company with the assistance of JPL's Technology Affiliates Program. ... NASA selected a builder to add an advanced 34-meter dish antenna at the Madrid, Spain, Deep Space Network facility, part of a plan to increase the DSN's capabilities by late 2003. ... Lt. Gen. Eugene Tattini was selected to become JPL's deputy director upon the retirement of Larry Dumas later in the year. ... A record 62,500 people attended JPL's annual open house (*below*) May 19 and 20. ... On May 25, Galileo successfully completed a flyby of Jupiter's moon Callisto. The pass was designed



to use Callisto's gravity to alter the shape of Galileo's orbit to achieve a flyby of Io in August. ... Daily global maps created with images from Mars Global Surveyor provided a moving picture of Martian weather during 1999-2000 similar to familiar satellite weather maps we see of Earth. ... JPL's Deep Impact mission, the first to ever attempt to impact a comet nucleus, successfully completed its preliminary design phase and has been approved by NASA to begin full-scale development for launch in January 2004.

JUNE

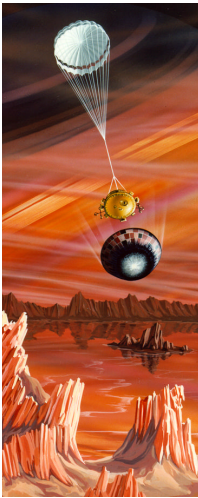
Ground was broken (*below*) for JPL's new Optical Interferometry Development Laboratory. The facility, designed to meet extremely demanding criteria for control of temperature, humidity, vibration and other factors, is scheduled to be completed in July 2002. ... The 10 most promising mission concepts of 43 proposed to NASA for possible launch to Mars in 2007 were selected to receive funding for six months of continued studies. Of those 10, two would be led by principal investigators from JPL: the Mars Environmental Observer (*below*), an orbiter that would explore the role of water, dust, ice and other materials within the Martian atmosphere; and CryoScout, (*above*) designed to use heated water jets to descend through Martian polar ice caps, to measure composition and search for organic compounds. ... Managers for the Cassini mission to Saturn announced a revised plan to work around a telecommunications problem and avoid loss of scientific data after the spacecraft drops the Huygens probe (*right*) to descend to the surface of Titan, Saturn's biggest moon, in January 2005. The new plan will change the originally planned date and geometry for the part of the mission in which the Huygens probe will parachute into the thick atmosphere of Titan.



... Managers for the Cassini mission to Saturn announced a revised plan to work around a telecommunications problem and avoid loss of scientific data after the spacecraft drops the Huygens probe (*right*) to descend to the surface of Titan, Saturn's biggest moon, in January 2005.

JULY

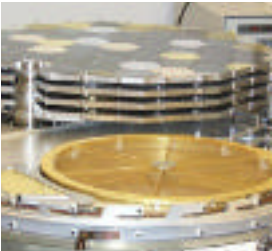
Earthquake scientists unveiled a new network of ground-motion monitors (*below*) in Southern California that use satellite technology to precisely record millimeter-level motions of the Earth's crust. JPL is one of the major partners and leaders in the development of the network. ... Daily observations by Mars Global Surveyor's thermal emission spectrometer produced images of the largest dust storm to be seen on Mars since the spacecraft's arrival in 1997. ... For the first time ever, a star spinning so fast its mid-section is stretched out was directly measured by an ultra-high-



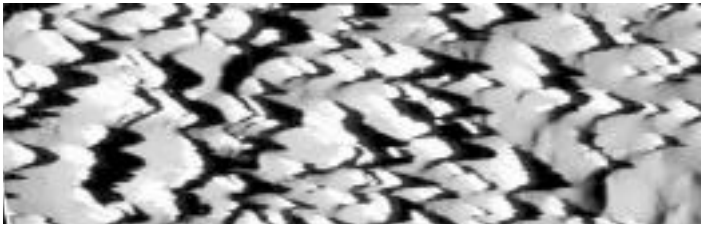
resolution NASA telescope system on Palomar Mountain near San Diego. Measuring the shape of this star, Altair, was as difficult as standing in Los Angeles, looking at a hen's egg in New York, and trying to prove that it's oval-shaped and not circular. ... Jason 1, the follow-on mission to the Topex/Poseidon ocean surface topography mission, arrived at Vandenberg Air Force Base for its launch in the fall.

AUGUST

Genesis (*right*), the JPL-managed mission to collect samples of the solar wind and return them to Earth, launched from Kennedy Space Center Aug. 8. ... Galileo released images of Jupiter's moon Callisto showing a spiky landscape (*above right*) of bright ice and dark dust. The pictures give the highest resolution view ever seen of any of Jupiter's moons. ... The Wide Field and Planetary Camera 2, designed and built by JPL for NASA's Hubble Space Telescope, provided a new, detailed image of violent gas collisions that produced supersonic shock fronts in a dying star. For the first time, scientists can see phenomena



leading to the formation of planetary nebulae. Previously, this had only been predicted by theory, but had never been seen directly. ... Eugene Tattini took over as the Laboratory's new deputy director. ... Physicists predicted gusty winds at the Sun's north pole for the few months following Ulysses' Aug. 31 flyby over that area.

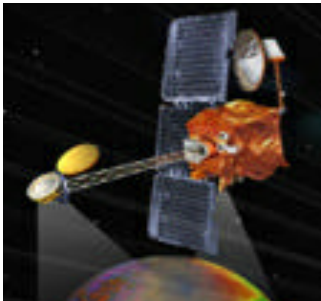


SEPTEMBER

JPL's Airborne Visible/Infrared Imaging Spectrometer provided assistance to disaster officials following the terrorist attacks on Sept. 11. *Aviris* was flown aboard a Twin Otter airplane at different altitudes to identify residual hot



spots from fires, and also allayed concerns about the dispersion of asbestos into the environment as dust. ... Having already completed its prime mission of flight-testing advanced technologies, including an ion engine, *Deep Space 1* successfully completed a risky flyby of comet Borrelly Sept. 22, flying within 2,200 kilometers (1,400 miles) of the comet's icy nucleus, giving researchers the best look ever inside the glowing core if icy dust and gas. ... Deputy Director Larry Dumas bid farewell to his JPL colleagues in Sept. 26 ceremonies.



(187 miles) above Mars and hit that point within 1 kilometer (6 miles). ... Caltech dedicated the Space Infrared Telescope Facility (SIRTF) Science Center on campus. JPL manages SIRTF, scheduled for launch in July 2002.

OCTOBER

Galileo revealed the discovery of the tallest volcanic plume ever seen—500 kilometers (more than 300 miles), which arose from a previously unknown volcano on the moon Io. ... 2001 Mars Odyssey (*left*) successfully entered orbit around Mars Oct. 23. Navigators were aiming for a point 300 kilometers



NOVEMBER

Utilizing upgraded ground facilities (*left*) at the Deep Space Network, Cassini began a 40-day search for the first direct detection of gravitational waves, a basic feature of how the universe behaves. ... Genesis entered its 30-month science collection orbit around the balanced-gravity point Lagrange 1. ... The Microwave Instrument for the Rosetta Orbiter arrived in Europe for testing. The mission is scheduled for launch in January 2003.



DECEMBER

Jason 1 (*left*) successfully rode a Delta II rocket into Earth orbit from Vandenberg Air Force Base Dec. 7. ... New observations made during a full Martian year (687 Earth days) by Mars Global Surveyor are expanding our understanding of the Martian climate and may indicate the climate is changing significantly even today. ... *Deep Space 1* completed its mission Dec. 18.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Call the Employee Assistance Program at ext. 4-3680 for meeting time and location.

Codopendents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parent Support Group—Meets the third Thursday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Senior Caregivers Support Group—Meets the first Thursday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Saturday, January 5

An Evening With Ken Burns—The renowned historian and filmmaker will lecture at 8 p.m. in Caltech's Beckman Auditorium. Free admission. Call (626) 395-4652.

Tuesday, January 8

JPL Stamp Club—Meeting at noon in Building 183-328.

Wednesday, January 9

"Cosmic Background Imager: Reading the Universe's Early History"—Caltech astronomy professor Dr. Anthony Readhead will lecture at 8 p.m. in

Beckman Auditorium. Free admission. Call (626) 395-4652.

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. Guests welcome. Call Joy Hodges at ext. 4-7041 for location.

Sunday, January 13

Chamber Music—The Tokyo String Quartet will appear at 3:30 p.m. in Caltech's Beckman Auditorium. Tickets are \$27, \$23, \$19 and \$15. Call (626) 395-4652.

Tuesday, January 15

JPL Hiking+ Club—Meeting at noon in Building 238-543.

Thursday, January 17

Social Security—A representative is available from 9:30 to 11:30 a.m. in the 167 cafeteria.

Friday, January 18

Mark Twain Tonight!—Hal Holbrook portrays the legendary author in a one-man show at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$35, \$31 and \$27 for adults; high school age and under, \$10. Call (626) 395-4652.

Saturday, January 19

Winter Concert—The Caltech Jazz Bands will appear at 8 p.m. in Beckman Auditorium. Free admission. Call (626) 395-4652.

Letters

Many thanks to my friends and coworkers for their support and expressions of sympathy following the recent passing of my mother. Also, thanks to the ERC for the plant sent to my home.

Ron Gillette

I would like to express my sincere gratitude to my friends and co-workers for the sympathy cards and expressions of condolence given to me following the death of my mother. I would also like to thank the ERC for the beautiful plant sent to my home.

Burt Sigal

I would like to thank the "JPL Wheels Camping Club" for the "Life-time Membership" they bestowed upon me at their annual Christmas party at the home of the Jacksons in Murrieta Springs, Calif. on Dec. 1. I was the

first secretary of the camping club when it was formed in the late 1960s and has been privileged to enjoy the Wheels outings for 14 years at the Glen Ivy Recreation Park in Corona, where I now reside. The award was very much appreciated.

Ruth E.Morgan, retiree

To all, present and past, thanks for working with me, and for the send-off upon my retirement. Good luck to the Laboratory. With best wishes,

Winston Gin

We would like to wholeheartedly thank our extended JPL family for your support and comfort during the recent passing of our beloved Grandmother. Your kind thoughts and wishes have lifted our spirits during the past few weeks. Also, a special thank you to ERC for the plants that have brightened our home.

Linda & Cindy Nguyen

Huyen Duong

Classifieds

For Sale

ARMCHAIRS, 2 matching, wicker, w/ushions, different patterns; + sm. table, very pale mauve, exc. cond., \$100/set. 364-9726.

BABY ITEMS: portable 3-in-1 pack & play pen, \$50; super saucer/active center, \$35; infant swing, battery operated, w/music, \$60; baby clothes, 3-12 mo.; Infant bouncy chair w/activity bar, \$10; infant front carrier \$10; \$91-3929, after 7 p.m.

BANANA PLANT, red, in 5-gal plastic pot, \$15/obo. BOWL, gfr, ceramic, 2-ft dia., 10" deep, \$225. 626/791-6101.

BEDROOM SET, beautiful, cream color, incl. queen bed w/headstand, desk, bookshelves and drawers, headstand features gold trimmimg w/mirror, cabinets & night light, gd. cond., exc. price. 790-4417, Patricia.

BIKE, '94 Trek 2120 Touring, 54" frame, ice violet, 14.5, 28" wheels, Shimano LX stays/frame, Shimano SPD pedals, Shimano RX100T (triple-21 gear) crankset, Shimano Deore LX derailleurs w/SIS bar end shifters, 22.8 lbs., exc. cond., < 300 miles on bike, orig. \$1,000, now \$660. 790-2123.

BODY BOARD, Moege Boogie, sky blue, whard silver bottom and leash, \$23/obo. 626/564-1225.

COMPUTER, laptop, Sony VAIO, Pent. III 700MHz, 64MB SDRAM, 10GB HD, 13.3" XGA screen, all-in-one design w/laptop drive & DVD-ROM (8x max), 2-yr. service plan w/CompuSua, bought Mar. 2001for \$1,700, sell \$1,200/obo. 949/370-8827.

COMPUTER, Pentium 3, 733 MHz, 128 mb

FITNESS MACHINE, Fitness Flyer no-impact walk/4-function monitor: scanner, calorie counter, response time, elapsed time; aerobic workout (upper and lower major muscle groups; vg cond., orig. \$200, sell \$99/obo. 249-8079.

GUITAR EFFECTS PEDAL, DOD Tech 8, all effects, bought used for \$120, sell for \$33/obo. 626/564-1225.

JACKET, men's, brown leather, Members Only sz. 38, ribbed waist & sleeve cuff, never worn, \$50/obo. COAT, women's belted trench, black leather, sz. 12/14, zip-out insulated lining, worn very few times, \$75/obo. RAINCOAT, women's, powder blue cotton-polyester, belted sz. 12, zip-out insulated lining, seldom worn, \$35/obo. 780-0470.

MISC: car cover, custom weather proof, for 1984-96 Corvettes, California Car Cover Co., orig. \$400, now \$99; metal stay, pack of 10, extra deluxe, multi colored for Visor or Palm, \$9.99; extra USB cradle for Visor, \$14.99; phone, deluxe Nokia 6100 series, for AT&T network, free case, \$99; batteries, for Nokia 5000 and 6000 phones, \$15; Eveready battery for older type camcorder, never used, \$5. 366-6134.

MISC: SyQuest cartridge drive, 44MB, \$15; cartridges \$1/ea; CD jewel cases, 50, \$10; Jenny Craig diet tapes, set of 14, \$50; computer pwr. contr., 3 pwr. switches + 1 master sw, 5 surge-protected outlets + 2 modem/faxphone jacks, new, \$20; organ, Yamaha \$15 electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, gd. \$7.500, sacrifice for \$3,000. 790-3899.

MODEMS, efficient networks speedstream 5260 Ethernet ADSL and Alcatel 1000 AD-SL 661/254-6134.

ORGAN, electronic, Wurliitzer, 2 manuals, 88 keys, 1 octave foot pedals, rhythms, mahogany, with bench, \$150. RECEIVER, Sony STR-6055 RCR, acc enclosure, Sony TC-K15, 1 cassette deck, nd. new belt, w/2 Advent 10" speakers, \$220. 248-9418.

REFRIGERATORS, G.E., 1 is beige, 17 yrs. old, side by side, \$100; other is white, 15 yrs. old, \$100. DINING ROOM TABLE, w/oak, cherry wood top, black legs, gd. cond., \$150. SOFA/SLEEPER, makes into qn.-sz. bed, abstract black, blue & mauve design, gd. cond., \$300. 626/357-8210.

SOFTWARE, Radius Firewall PCI card, w/complete DVD editing kit, (IEEE 1394 compatible), digital video editing software, and 6 to 4 pin DV cable, compatible w/PC or Mac, perfect for making movies from digital video camcorder, never used, \$80. 626/333-3212.

TELEVISION, Hitachi, Ultravision, 46", projection, exc. cond., 4 yrs old, \$700. 395-9631.

TEST EQUIPMENT: suitcase vacuum tube tester & all adapters including TV picture tube: EICO 950B resistance-capacitance comparator bridge: EICO 385 color bar/pattern generator: EICO 955 capacitor checker: Knight Flyback Checker: Knight KG-650 vacuum tube voltmeter: Heathkit V-7A vacuum tube voltmeter which voltage probe: instruction manuals incl. for most, negotiable, can bring to JPL for seriously interested. 352-7892.

TRIMMER, string, w/retroer attachment, Homelite gas powered, used very little, \$50/obo. 249-8079.

TRIP TO MALAYSIA, round trip economy airfare, 4 nts. hotel in Kuala Lumpur, all transfers to/from hotel, tour of city, gd. thr. Oct. 29, 92, 1000, 6 wks. notice needed for booking; retail value \$1,000 seeking \$500, I won't be put can't use it. 323/935-3432.

VIDEO, Disney's Sleeping Beauty, VHS, new, sealed, limited edition masterpiece, fully restored with THX sound, \$25. 562/240-2313.

WALL UNIT, 6' x 6' x 1', open shelving w/wood cabinet on bottom, solid wood, \$30. 243-8255.

WOODWORKING MACHINE, Woodmaster 6 in 1, variable power 1.5 to 3 HP, 900-5200 rpm., like Shopsmith MarkV. 10" Table Saw, 34" Lathe, 16.5" Drill Press, horizontal boring, radial sanders, overhead pin router, plus 18" jig saw, + many too accessories to list, in top shape, all manuals included, \$799/obo. 909/621-9722.

Vehicles/Accessories

'99 AUDI Quattro, 1.8 turbo, automatic with tiptronic, white w/gray interior, sunroof, sports pkg., trip computer, keyless entry, alloy wheels, all records, \$19,900. 626/358-3730, Randy.

CATALINA Capri sailboat, 14 ft., boat and trailer, good cond., reg. transfer through 2003, \$800/obo. 661/263-2037.

'83 BMW 633CSi, black, orig. paint, cosmetically good inside/out, well maint., gd. records, \$5K/obo over retail Blue Book. 626/836-3931.

'98 DODGE Stratus, 59K mi., new tires, vg cond., clean, am/fm, cassette, auto, a/c, \$8,800. 626/303-5174. Joe.

'94 FLEETWORTH Provan trailer, model 24 M, a/c, heater, am/fm case, microwave fridge, 19' awning, dual propane tanks, 2 doors, full bath, outside shower, mirrored cabinets, hitch included, vg cond., \$9,900/obo. 951-1257.

'95 FORD Windstar Van LX, loaded w/lots of extras, quad captain's chairs, 81K mi., runs great, \$9,500. 626/447-6423.

'92 FORD F150 truck, 67,000 mi, vg. owner, longbed, camper shell, a/c, radio/cass., V-8, 5-spd, manual, heavy duty, geared for towing, white, gray interior, \$6,995. 626/798-1765.

'90 FORD F150 Lariat pickup, supercab, 5.8 L, V8, 4 wd, alt. w/ many extras, low mi., orig. owner, very clean, exc. cond., \$6,900. 626/363-3704.

'93 GMC Suburban 1500, 4x4, tow pkg, 3rd seat, new tires and bath., phone, roof rack, full pwr, tint, am/fm/cass, exc. maint rec. and cond., \$8,000. 626/799-3587.

'90 HONDA Civic EX Sedan 4 dr., auto trans, air, pwr. steering, power windows, tilt wheel, cruise contr., dual airbags and ABS, keyless entry, moonroof, 16,000 mi., \$17,000. 626/355-9707.

'93 HONDA VFR 750 Motorcycle, exc. cond., new chain, new front tire, pearl white, 25K mi., \$3,500. 661/275-2098.

'92 HONDA Accord EX Sedan 4 dr., 106K mi., gd. cond., white w/blue int., auto, 4 cyl. 2.2 L, front whl dr., a/c, p/s, p/w, p/dl, cruise contr., ABS, tilt whl, sun/moon roof, am/fm stereo/cassette (anti-theft), gd. tires, \$6,000. 626/296-9073, Patti.

'90 HONDA Accord LX, manual 4-dr sedan, 15,000 mi., low miles, power windows, a/c, all works, all perfect, maroon exterior, beige interior, \$5,300/obo. 952-1456, griffith@uow.edu.au.

'99 JEEP Wrangler, exc., like new cond., black, soft top, 23K mi., E, 4 wheel drive, \$11,000/firm. 957-7742, eves.

'96 LINCOLN Continental, 21K mi, V8, auto, ABS, traction control, moonroof, CD changer, Lo Jack installed, red/tan leather, exc. cond., \$12,800/obo. 626/351-0891.

'00 NISSAN Pathfinder LS, 2 wd, champagne, alt, a/c, p/s, t/c, Bose audio, am/fm/stereo, cass, CD, sunroof, custom seat covers, 15,000 mi. \$25,000/obo. 200-0012.

'00 NISSAN Maxima, champagne color, alloy wheels, AT, P/S, a/c, AM/FM CD-cass., color-coordinated Maxima floor mats, immac. shape, loaded, low miles 29,500, \$17,000. 800/318-6888, ext 203, Clive.

'90 NISSAN 240SX SE Fastback, red, 5-speed, tip-up/removable sunroof, pwr. steering, tilt wheel, cruise, am/fm/stereo, single owner, all records, 100K mi., alt. cond., \$3,000/obo. 323/467-4742.

'87 NISSAN, truck, 4 x 4, 5-spd, stick w/overdrive, cruise contr., AM/FM, CD, power windows/locks/brakes, VG 30, V6, new trans and 4 x 4, new battery, sunroof and shade, shell w/lock ext. cab and long bed, power window, cool running, \$5,500/obo. 626/446-1054 or 626/201-1895, Mike.

'98 PONTIAC convertible, beautiful, white, loaded, ~19,000 miles, exc. cond., 25 mpg, factory warranted, \$11,000/obo. 790-2133.

'73 PONTIAC LeMans, must sell fast, 30K on road, no rust, am/fm stereo, interior, gd. cond., orig. owner, exc. transp. car, \$1,000. 626/966-2904 after 6 p.m., weekdays.

'85 SUNRADER motor home, 21', Toyota powered, 36K mi., dual rear wheels, 4-burner gas stove/oven & sink, restroom w/toilet, shower & sink, overhead cab, sleeps 2 adults, dining area converts for additional sleeping area and refrig., + more. 642-5091.

'93 TOYOTA Tercel, 2 door, 37,000 mi., a/c, exc. cond., w/airbags, \$6,000/obo. 626/794-4921 or 323/393-2831, Bert.

'92 TOYOTA Camry LE, 4 cyl., 4 dr., all pow-er, auto, 140K mi., \$3,400/obo. 541-1408, David, weekend.

'87 TOYOTA Camry silver, 4 dr., 5-spd, cruise control, am/fm/CD, 162K mi., needs a few repairs, Blue Book \$1,700, sell \$1,200/obo. 626/943-2840.

'97 TRAILER LITE, Forest River Sierra, 17-ft. fully self-contained weekend,er, orig. owner, exc. cond., kept under carport, sleeps 4 adults, microwave, am/fm stereo, 2 speakers, forced air furnace, a/c, Domestic refrig. 3-burner stove, oven, dual kitchen, sinks, dual propane tanks, awning, battery, spare tire, \$6,995. 626/798-1765.

'89 VOLVO 740GLE, 4-dr. sedan, 150K mi., auto, a/c, p/w, wincl/mkrms, am/fm, cruise ctr, runs great, \$2,500/obo. 248-8682.

Wanted

ANTIQUE LINENS, white on white, hand embroidered, preferably monogrammed (any monogram), must be in exc. cond. 980-1638.

APARTMENT OR CONDO for rent at Lake Arrowhead next summer that will sleep 8 adults and 4 children, children can use sleeping bags on the floor, preferably with close proximity to the lake. 626/796-8925.

BATTERY, inexpensive, for IBM 755CX laptop. 626/777-0157, pgr.

BOY SCOUT PATCHES and such for collection. 909/948-9595.

CARPOL PARTNER, part-time, from Laguna Niguel, 92677. 949/363-7418.

CHILD CARE, after-school, homework help for 3rd and 4th grader, + light house-keeping, La Crescenta, some local driving also needed. 249-1583, Terri.

DRUM SET, trap, prefer major brand, will pay to \$300. 626/797-1673.

RIDERS for vanpool from Littleton/ Palmdale to JPL. 661/944-2448 or 3-3790.

ROOM, temporary, female visitor to Pasadena needs single rm. for several months, mostly as a base of operations as she will be extensively traveling. 626/397-7224, Charlie.

ROOM needed 1-2 nights per week in La Canada area. 949/363-7418.

SPACE INFORMATION/Memorabilia from U.S. & other countries, past & present. 790-8523, Marc Rayman.

TUTOR for upper division statistics, Jan./Feb. only, 962/345-0681.

VOLLEYBALL PLAYER, coach, no beginners please, Tuesdays 8-10 at Eagle Rock High School, \$3/nt. 956-1744, Barbara.

Free

CAT, stray, to good home, gold and white, friendly and playful, approx. 2-3 yrs. old. 626/323-6567.

Lost & Found

Lost: CELL PHONE, J505x, in a gray pouch with an orange card attached to it on Dec. 20 at 11:30 am in a parking lot going towards East lot; if not there, might have been dropped in East lot parking area. Ext. 3-1715, Della or 626/797-6814.

Found: BRACELET, silver-colored, at Woodbury, Bldg. 601 on 12/13. Ext. 4-9550, Barbara.

For Rent

ALTADENA, culst., 2 bd., 1.5 ba., private house w/attached, den, garage, laundry facility. 704-4376.

BURBANK HILLS, 3 bd., 1 ba., home on quiet tree-lined st., laundry HU, C/A, hrdwd flrs,

fireplace, fenced backyard, remodeled kitchen, w/DW, stove, fridge, \$1,800. 952-1538.

LA CANADA apt., 1 bd., 1 ba., 10 min. to JPL, groups floor unit in 4-plex, acc, enclosed garage, \$790. 790-7444.

MONROVIA HILLS, 2 large bd., with 2 full ba., in a private family home, share kitchen & laundry, electricity, gas, water and cable incl., 12 miles from JPL, no smoking! pets: \$475 each bed with its ba. 626/358-7728.

MONTROSE, studio apt, cblk, cabin-like, 4 mi. to JPL, single occup, 2312 S. 4th St., Ave. near Ocean View, \$550. 248-0568.

PASADENA, fun, condo studio, 1115 E. Corvado, #223; gated, pool, carport, laundry, BBQ area, non-smoker, no pets, 2 blocks N. Caltech @ Wilson & Cordova, you pay electric. \$875. 626/792-9053, Ray and Marilyn.

PASADENA, cottage for one, 1 bd., living kitchen, new ba., laundry carport, behind house in estate area, 3 miles/Old Town and JPL, unfurn., no smoking, no dogs, \$1,100 including utility, cable, for long-term rental. 626/796-2662.

PASADENA, room in a 4 bd., 2 ba. apt, furn., acc, parking, laundry in 4-plex, 5 mi. to Caltech, co-ops welcome, \$495 + util. 626/351-9641.

PASADENA, 1 bd., 1 ba. apt, furn., laundry rm., a/c, parking, close to Caltech, PCC, great for co-ops. \$925 + util. 626/351-9641.

PASADENA, spacious 2-story condo, 3 bd., 2.5 ba., prestigious community, beaut. inter., bright kitchen, prof. landscaped, 626/402-9775. 626/792-9053 Marilyn or Ray.

PASADENA, condo, spacious 1,500 sq. ft., 2 bd., 2 ba., w/2-car gar., 25 miles to Caltech, \$1,680. 626/233-9496 or http://members.aol.com/PasCondo/.

PASADENA townhome, 2 bd., 1 1/2 ba., a/c, fireplace, washer/dryer, near Caltech/PCC, new carpet, ceramic tile, \$1,300. 626/402-9775 or 626/379-3503.

PASADENA, room, 25 miles to Caltech, \$1,680. 626/233-9496 or http://members.aol.com/PasCondo/.

PASADENA townhome, 2 bd., 1 1/2 ba., a/c, fireplace, washer/dryer, near Caltech/PCC, new carpet, ceramic tile, \$1,300. 626/402-9775 or 626/379-3503.

SOUTH PASADENA, studio apt., 1718 Huntington Dr. betw. Marengo and Milan Sts, fully furn., util. pd., car space, laundry, no pets, non-smoker, \$750; managers unit: deluxe 1 + bd., fully furn., you pay electric/ phone \$1,000 (\$100 incl. phone & 1 person). 626/792-9053 Marilyn or Ray.

SYLMAR, new home, 4 bd., 2.5 ba., spacious, gated, view, pool, buy option, near mountains and golf, \$1,995. 626/584-6526.

TEMPLE CITY, single-family house, 3 bd., 2 ba., fam. rm., office, wood-burning fireplace in liv. rm. 3 car detached garage, acc, dishwasher, gas BBQ in backyard, on 2 acres of forested land w/many flat areas for barns and corrals, \$312,000. 653-9283, Carolyn.

PASADENA, exc. condo next to Caltech, totally remod. 2 bd + 1 3/4 ba., 1,200 sq. ft., newly refin. hardwood flrs. in din. rm, newer appliances, carpet & paint, lg. balcony, just off central air, \$535K. 957-8813.

OREGON, secure & quiet country estate nr. historic Jacksonville, 2,430 sqft, custom living space, 2 bd., office/hdrn bedrm., 3 ba., 810 sqft garage/workshop space, 2,000 sq. ft. custom redwood deck surrounds house, gorgeous view, on 20 acres of forested land w/many flat areas for barns and corrals, \$312,000. 653-9283, Carolyn.

PASADENA, exc. condo next to Caltech, totally remod. 2 bd + 1 3/4 ba., 1,200 sq. ft., newly refin. hardwood flrs. in din. rm, newer appliances, carpet & paint, lg. balcony, just off central air, \$535K. 957-8813.

SYLMAR, 2 bd., 2.5 ba., 2-story townhome, end unit, mtn. view, 2-car gar. w/additional storage, \$134,900. 362-3358.

Real Estate

LA CANADA, west, craftsman home, 3 bd., 1.75 ba., 1,910 sq. ft., 7 acre lot, many upgrades, private setting, 20-year roof, central air, \$535K. 957-8813.

OREGON, secure & quiet country estate nr. historic Jacksonville, 2,430 sqft, custom living space, 2 bd., office/hdrn bedrm., 3 ba., 810 sqft garage/workshop space, 2,000 sq. ft. custom redwood deck surrounds house, gorgeous view, on 20 acres of forested land w/many flat areas for barns and corrals, \$312,000. 653-9283, Carolyn.

PASADENA, exc. condo next to Caltech, totally remod. 2 bd + 1 3/4 ba., 1,200 sq. ft., newly refin. hardwood flrs. in din. rm, newer appliances, carpet & paint, lg. balcony, just off central air, \$535K. 957-8813.

SYLMAR, 2 bd., 2.5 ba., 2-story townhome, end unit, mtn. view, 2-car gar. w/additional storage, \$134,900. 362-3358.

Vacation Rentals

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bed, suite, sleeps 6. 949/786-6548.

CAMBRIA, ocean front house, sleeps up to 4, exc. view. 248-8853.

HAWAII, Kona, ocean front on Keohau Bay, house/guest house certainly sleep 6, 3 bd., 2 ba., rustic, relaxing & beautiful,